

## ***SUPPLEMENTAL***

***NOTE: This office action is the supplemental office action dated March 22, 2008 due to the missing arguments of non-amended claims 26-30, and correcting the ground of rejection of claims 26-30 to Claim Rejections-35 U.S.C. 102(e).***

## ***DETAILED ACTION***

This office action is in response to applicant's amendment/remarks filed 12/21/2007.

### ***Response to Arguments***

Applicant's arguments have been fully considered.

1. Applicant's argument with respect to Claim Objections with respect to claims 11-25 **moot** as the amendment to the claims meets the requirements, therefore, The Claim Objections with respect to claims 11-25 withdrawn.
2. Response to arguments with respect to rejected claims 11-25 under Claim Rejections - 35 USC 102(e) is **moot** in view of the new ground(s) of rejection necessitated by the claims amendments, therefore, the Claim Rejections-35 U.S.C. 102(e) with respect to claims 11-25 withdrawn.

3. Applicant's arguments with respect to the rejected claims 11-30 under Claim Rejections-35 U.S.C. 102(e) have been fully considered, but they are not persuasive.

Applicant argues (Remarks page 6) that “Khayrallah *discuss that the intermediate units 30, 40 evaluate the received signals that are destined for the receiver unit 50*”, Examiner agrees, however, Examiner disagrees that Khayrallah does not discuss or suggests “*A relay station of a radio communication station, comprising: a receiving device to receive data destined for a receiving station; an analyzing device to analyze said data with regard to its reception quality and produce a reception result; and a transmitting device to selectively forward the data to the receiving station, depending on the reception result of the analyzing device*”. Khayrallah clearly teaches the intermediate unit (relay station 30, 40) of the radio communication system (10) including a receiver (380) that receives data to be sending to the receiving station (e.g., 50), the intermediate unit (relay) includes audio processing (320), input/output (260), and control unit (220), the processor and controller (e.g., 220, 320) evaluating (analyzing) transmission data with respect to receiving parameter such as fading for signal strength or quality that is well known in the art and generating information on the received signal for communication with the transmitter and receiver units, the transmitting device (20) chooses the data transmission to the reception station (50) according to the feedback information that is generated by the intermediate unit (30, 40) (e.g., Fig. 1-4, 5:42-55), and further, Khayrallah teaches ad-hoc and radio communication system (e.g., 2:36-37, 6:47-49) that is same as the applicant invention (specification, 5:20-22, 6:1-3) with the transmitting, receiving, and

intermediate units (relay) that are including receiver (380), transmitter (400), controller (220), processor (320), memory (240), and antenna (412, 440) with Bluetooth (ad-hoc) module (410) (*e.g.*, *Fig. 1, 4*).

Khayrallah clearly discloses the claimed invention, as discussed in below office action.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 26 - 30 are rejected under 35 U.S.C. 102(c) as being anticipated by Khayrallah (Khayrallah, U.S. Patent 7,113,745).

Regarding claim 26, Khayrallah discloses a relay station of a radio communication station (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, the relay station such (30 or 40) of the radio communication system (10)*), comprising: a receiving device to receive data destined for a receiving station (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, 5:63-67, 6:13-15, 19-21, 25-59, the receiver (380) receives data to be sending to receiving station (e.g., 50)*); an

analyzing device to analyze said data with regard to its reception quality and produce a reception result (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59, the processor and controller (e.g., 220, 320) evaluating transmission data with respect receiving quality and generate outcome*); and a transmitting device to selectively forward the data to the receiving station, depending on the reception result of the analyzing device (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59, the transmitting device (20) chooses the data transmission to the reception station (50) according to the feedback information that is generated*).

Regarding claim 27, Khayrallah teaches all the limitations of claim 26, and further, Khayrallah teaches wherein the data is transmitted in parallel to a plurality of relay stations (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45*), and the relay station forwards the data only if its data reception is superior to that of other relay stations (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59*).

Regarding claim 28, Khayrallah teaches all the limitations of claim 26, and further, Khayrallah teaches wherein the data is forwarded over different parallel paths via different relay stations, and the data is preemphasized and/or deemphasized in the relay stations (*e.g.*, *Fig. 1-4, Abstract: 1-4, 1:39-45, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59*).

Regarding claim 29, Khayrallah teaches all the limitations of claim 26, and further,

Khayrallah teaches wherein the data is forwarded over different parallel paths via different relay stations, and the data is decoded and/or encoded in the relay stations (*e.g.*, 1:39-45, 48-50, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59).

Regarding claim 30, Khayrallah teaches all the limitations of claim 26, and further, Khayrallah teaches wherein the data is transmitted in parallel over different paths, and the data is received overlaid at the receiver station and processed jointly (*e.g.*, 1:39-45, 48-50, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah (Khayrallah, U.S. Patent 7,113,745) in view of Ikeda (Ikeda et al., U.S. Patent 6,728,918).

Regarding claim 11, Khayrallah discloses a method for transmitting data in a radio communication system (*e.g.*, Fig. 1-4, Abstract:1-4, 1:39-45, the data is being

*transmitted in the radio system (10)), comprising: transmitting data from a transmitting station to a data-receiving station over at least two relay stations (e.g., Fig. 1-4, Abstract: 1-4, 1:39-45, 2:23-27, 3:61-62, 5:42-45, the communication system (10) includes transmitting data from transmitting station (20) to the data receiving station (50) over at least two relay stations such as repeaters (30 and 40)), each relay station receiving and forwarding the data (e.g., Fig. 1-4, Abstract: 1-4, 5:42-45, 3:61-62, 4:10-23, each of the relay stations such as repeaters(30 and 40) forwards the data); [generating requests] for retransmission if it is determined that the received data is not sufficiently free of error (e.g., Fig. 1-4, 3:19-24, 4:20-38, 50-51, 54-61, 5:45-67, 6:1-6, the received data is being evaluated for fading estimations and being transmitted to the receiver, the receiver “sends information about the received signals to the” repeater device (30, 40), the repeater retransmits signals to the receiver), the [requests for] retransmission being generated only at the receiving station (e.g., Fig. 1-4, 3:19-24, 4:20-38, 50-51, 54-61, 5:45-67, 6:1-6, the retransmission is being generated only for the receiving station (50)); and retransmitting the data from the transmitting station [if a request] for retransmission is received from the receiving station (e.g., Fig. 1-4, Abstract: 1-4, 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6, the receiving station (50) sends inquiry to the transmitting station, and the signals are being retransmitted to the receiving station (50)).*

Khayrallah does not specifically teach the request for retransmission, however, Khayrallah teaches sending “information about the received signals to the” signal transmitter (e.g., Fig. 1-4, 3:19-24, 4:20-38, 50-51, 54-61, 5:45-67, 6:1-6, the receiver

*device (50) sends “information about the received signals to the” transmitter, and the transmitter retransmits signals for the receiver device (50), and further, the receiver device (50) is able to sends inquiries (request) for transmission).*

In a related art dealing with communication system relaying retransmission signal (e.g., 2:26-29, 10:31-40, 12:1-22), Ikeda teaches the receiver request for retransmission (e.g., 10:31-40, 12:1-22, 13:42-47, 20:54-57, *the receiver request for retransmission*).

It would have been obvious to one of ordinary skill in the art at the time invention was made to have included Ikeda's transmission relay communication system retransmission request with Khayrallah's transmission relay communication system retransmission “to provide a method and a system for relay transmission being free from data collision with a transmission request on data links and accordingly causing no failure in relay” (Ikeda, e.g., 2:26-29).

Regarding claim 13, Khayrallah in view of Ikeda teach all the limitations of claim 11, and further, Khayrallah teaches wherein at least one of the relay stations checks the data received from the transmitting station with regard to reception quality (e.g., 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59), if the reception quality does not meet a determined level of quality of received data (e.g., 5:30-67, *the signal (e.g., S1, S2) needs to meet the specific quality level and the low signal quality is the fading signal that is not being transmitted*), the relay station does not forward said data to the receiving station (e.g., 5:30-67, *the signal is not going to be transmitted to the receiving station*), and if the reception quality meets a determined level of quality of received data, the relay station

does forward said data to the receiving station (*e.g.*, 5:30-67, the quality signal is being transmitted to the receiving device (50)).

Regarding claim 14, Khayrallah in view of Ikeda teach all the limitations of claim 13, and further, Khayrallah teaches wherein the relay stations receive the data in parallel and check the reception quality of the received data (*e.g.*, 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6), a first relay station receives the data with acceptable reception quality, and only the first relay station transmits the data to the receiver station (*e.g.*, 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6).

Regarding claim 15, Khayrallah in view of Ikeda teach all the limitations of claim 13, and further, Khayrallah teaches wherein error correction and/or error detection is performed in at least one of the relay stations prior to forwarding the data (*e.g.*, 1:12-22, 5:63-67, 6:1-6).

Regarding claim 16, Khayrallah in view of Ikeda teach all the limitations of claims 11, and further, Khayrallah teaches wherein a plurality of the relay stations receive the data in parallel (*e.g.*, Fig. 1-4, Abstract:1-4, 1:39-45), check the reception quality of the data and produce a reception result (*e.g.*, 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59), and in at least a first relay station, a determination is made on whether or not to forward the data based on the reception result of the first relay station and based on the reception result of another relay station (*e.g.*, Fig. 1-4, Abstract:1-4, 1:39-45, 5:33-37,



*42-45, 63-67, 6:13-15, 19-21, 25-59).*

Regarding claim 17, Khayrallah in view of Ikeda teach all the limitations of claim 11, and further, Khayrallah teaches wherein the transmitting station, the receiving station and at least some of the relay stations belong to a radio communication system communicating on a single frequency (*e.g., 4:10-23, 54-67, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59).*

Regarding claim 18, Khayrallah in view of Ikeda teach all the limitations of claims 11, and further, Khayrallah teaches wherein the data is forwarded over different parallel paths via different relay stations, and the data is preemphasized and/or deemphasized in the relay stations (*e.g., Fig. 1-4, Abstract:1-4, 1:39-45, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59).*

Regarding claim 19, Khayrallah in view of Ikeda teach all the limitations of claims 11, and further, Khayrallah teaches wherein the data is forwarded over different parallel paths via different relay stations, and the data is decoded and/or encoded in the relay stations (*e.g., 1:39-45, 48-50, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59).*

Regarding claim 20, Khayrallah in view of Ikeda teach all the limitations of claims 11, and further, Khayrallah teaches wherein the data is transmitted in parallel over different paths, and the data is received overlaid at the receiver station and processed jointly (*e.g.,*

*1:39-45, 48-50, 4:1-42, 5:33-37, 42-45, 63-67, 6:1-6, 13-15, 19-21, 25-59).*

6. Claims 12-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah (Khayrallah, U.S. Patent 7,113,745) in view of Brederveld (Brederveld et al., U.S. Patent 5,898,679).

Regarding claim 12, Khayrallah discloses the method for transmitting data in a radio communication system (*e.g., Fig. 1-4, Abstract:1-4, 1:39-45, the data is being transmitted in the radio system (10)*), comprising: transmitting data from a transmitting station to a data-receiving station over at least two relay stations (*e.g., Fig. 1-4, Abstract:1-4, 1:39-45, 2:23-27, 3:61-62, 5:42-45, the communication system (10) includes transmitting data from transmitting station (20) to the data receiving station (50) over at least two relay stations such as repeaters (30 and 40)*), each relay station receiving and forwarding the data (*e.g., Fig. 1-4, Abstract:1-4, 5:42-45, 3:61-62, 4:10-23, each of the relay stations such as repeaters(30 and 40) forwards the data*); acknowledging receipt of the data with an acknowledgement by the data receiving station (*e.g., Fig. 1-4, Abstract:1-4, 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6, the receiver sends receiving data notification information*); and retransmitting the data in the event of unsuccessful transmission of the data(*e.g., Fig. 1-4, Abstract:1-4, 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6, data is being retransmitted to overcome the transmission problems*); [when the acknowledgement is not received,] retransmission of the data being controlled only by the transmitting station (*e.g., Fig. 1-4, Abstract:1-4, 2:21-27, 3:22-32, 4:10-23,*

*5:63-67, 6:1-6, the data is being retransmitted when transmission having problems and transmitting station controls data transmission).*

Khayrallah does not specifically teach retransmit when the acknowledgement is not received, however, Khayrallah teaches retransmission when “message transmitted between tow units in the system are lost or garbled” (*e.g., 1:12-15, 5:45-67, when transmission signal is lost no information is going to be sent from the receiver as normal that is sending “information about the received signals to the” signal transmitter*).

In a related art dealing with communication system relaying retransmission signal (*e.g., 1:60-65, 2:57-67, 4:55-59*), Brederveld teaches retransmit when the acknowledgement is not received (*e.g., 1:60-65, 2:57-67, 4:55-59*).

It would have been obvious to one of ordinary skill in the art at the time invention was made to have included Brederveld’s transmission relay communication system retransmission without receiving acknowledgement with Khayrallah’s transmission relay communication system retransmission to provide the transmission relay communication system with retransmission “only upon an indication that the destination end-station has not received a message error-free” to consumes less bandwidth (*Brederveld, e.g., 1:60-65, 2:2-7*).

Regarding claim 21, Khayrallah in view of Brederveld teach all the limitations of claim 12, and further, Khayrallah teaches wherein at least one of the relay stations checks the data received from the transmitting station with regard to reception quality (*e.g., 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59*), if the reception quality does not meet a

determined level of quality of received data (e.g., 5:30-67, the signal (e.g., S1, S2) needs to meet the specific quality level and the low signal quality is the fading signal that is not being transmitted), the relay station does not forward said data to the receiving station (e.g., 5:30-67, the signal is not going to be transmitted to the receiving station), and if the reception quality meets a determined level of quality of received data, the relay station does forward said data to the receiving station (e.g., 5:30-67, the quality signal is being transmitted to the receiving device (50)).

Regarding claim 22, Khayrallah in view of Brederveld teach all the limitations of claim 12, and further, Khayrallah teaches wherein the relay stations receive the data in parallel and check the reception quality of the received data (e.g., 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6), a first relay station receives the data with acceptable reception quality, and only the first relay station transmits the data to the receiver station (e.g., 2:21-27, 3:22-32, 4:10-23, 5:63-67, 6:1-6).

Regarding claim 23, Khayrallah in view of Brederveld teach all the limitations of claim 12, and further, Khayrallah teaches wherein error correction and/or error detection is performed in at least one of the relay stations prior to forwarding the data (e.g., 1:12-22, 5:63-67, 6:1-6).

Regarding claim 24, Khayrallah in view of Brederveld teach all the limitations of claim 12, and further, Khayrallah teaches wherein a plurality of the relay stations receive the

data in parallel (*e.g.*, *Fig. 1-4, Abstract:1-4, 1:39-45*), check the reception quality of the data and produce a reception result (*e.g.*, *1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59*), and in at least a first relay station, a determination is made on whether or not to forward the data based on the reception result of the first relay station and based on the reception result of another relay station (*e.g.*, *Fig. 1-4, Abstract:1-4, 1:39-45, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59*).

Regarding claim 25, Khayrallah in view of Brederveld teach all the limitations of claim 12, and further, Khayrallah teaches wherein the transmitting station, the receiving station and at least some of the relay stations belong to a radio communication system communicating on a single frequency (*e.g.*, *4:10-23, 54-67, 5:33-37, 42-45, 63-67, 6:13-15, 19-21, 25-59*).

### ***Conclusion***

The prior art made of record considered pertinent to applicant's disclosure, see PTO-892 form.

Applicant's amendment necessitated the **new ground(s)** of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 571-272-7874. The examiner can normally be reached on 7:00 AM -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew D. Anderson can be reached on 571-272-4177. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Shaima Q. Aminzay/  
Examiner, Art Unit 2618

April 23, 2008

/Matthew D. Anderson/  
Supervisory Patent Examiner, Art Unit 2618